

**WHAT IS CLAIMED IS:**

1. An electric power supply unit comprising;

a first regulator which converts the voltage of a battery supplied by the battery into a fixed voltage,

5 a second regulator which generates a lower voltage than said first regulator,

a voltage detection means which outputs an OFF signal when the output voltage of the first regulator drops less than a first set voltage, and output an ON signal when the output voltage of said first regulator rises more than a second set  
10 voltage, and

a means which stops the voltage output from said second regulator when the OFF signal is output from said voltage detection means.

2. An electric power supply unit according to claim 1, wherein

15 said first set voltage is higher than the output voltage generated by said second regulator.

3. An electric power supply unit according to claim 2, wherein

said second regulator that the voltage output has stopped is started when  
20 the ON signal is output from said voltage detection means, the battery voltage supplied again by the battery is converted, and the fixed voltage is output.

4. An electric power supply unit according to any one of claims 1 to 3, wherein said second set voltage is higher than said first set voltage.

5. An electric power supply unit comprising;

a first regulator which converts the battery voltage supplied by the battery into a first voltage.

a third regulator which converts the first voltage output from said first  
5 regulator into a second voltage.

a second regulator which converts the first voltage output from said first regulator into a third voltage.

a first voltage detection means which outputs an OFF signal when the second voltage output from said third regulator drops less than the first set voltage,  
10 and outputs an ON signal when the second voltage output from said third regulator rises more than the second set voltage, and

a means which stops the voltage output from said second regulator when an OFF signal is output from said first voltage detection means.

15 6. An electric power supply unit comprising;

a first regulator which converts the battery voltage supplied by the battery into a first voltage.

a third regulator which converts the first voltage output from said first  
regulator into a second voltage.

20 a second regulator which converts the second voltage output from said third regulator into a third voltage.

a first voltage detection means which outputs an OFF signal when the second voltage output from said third regulator drops less than the first set voltage, and outputs an ON signal when the second voltage output from said third regulator

risers more than the second set voltage, and

a means which stops the voltage output from said second regulator when an OFF signal is output from said first voltage detection means.

- 5    7.    An electric power supply unit according to claim 5 or 6, further comprising;  
       a second voltage detection means which stops the first voltage output from  
       said first regulator by outputting an OFF signal when the first voltage output from  
       said first regulator drops less than the third set voltage, and outputs the first voltage  
       output from said first regulator by outputting the ON signal when the first voltage  
 10    output from said first regulator rises more than a set voltage of the fourth.

8.    An electric power supply unit according to any one of claims 5 to 7, wherein  
       said first set voltage is higher than the third voltage generated by the  
       second regulator.

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9.    An electric power supply unit according to any one of claims 5 to 7, wherein  
       when the ON signal is output from said first voltage detection means, said  
       second regulator that the voltage output has stopped is started, the battery voltage  
       supplied again by the battery is converted to output the fixed voltage.

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10.    An electric power supply unit according to any one of claims 5 to 9,  
       wherein,  
       said second set voltage is higher than said first set voltage.

11. An electric power supply unit according to any one of claims 5 to 10, wherein,

said first set voltage and said second set voltage are lower than the third set voltage.

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12. An electric power supply unit according to any one of claims 5 to 10, further comprising;

a means which supplies the second voltage output from the third regulator and the third voltage output from said second regulator to a microcomputer as two

10 or more power units for the microcomputer,

wherein said third fixed voltage is lower than the power unit potential difference limited by said microcomputer.

13. An electric power supply unit according to any one of claims 5 to 12,

15 wherein

when an ON signal is output from said second voltage detection means, said first regulator that the first voltage has stopped is started, and the battery voltage supplied again by the battery is converted to output the first voltage.

20 14. An electric power supply unit according to claim 13, wherein

the fourth set voltage restarted after the first regulator is stopped based on said third set voltage when the first voltage output from said first regulator is abnormal is a hysteresis voltage.

15. An electric power supply unit according to any one of claims 5 to 14, further comprising;

an overheating detector provided in an electric power supply unit, which detects overheating,

5 wherein when said overheating detector detects that the internal temperature of electric power supply unit is at the preset temperature, the output of the first voltage from said first regulator is stopped.

16. An electric power supply unit according to claim 15, further comprising;

10 a means which restarts said first regulator when the internal temperature of electric power supply unit detected by the overheating detector drops less than the preset temperature after said first regulator is stopped.

17. An electric power supply unit according to claim 16, wherein

15 the set temperature of said overheating detector has a hysteresis characteristic.

18. An electric power supply unit according to any one of claims 5 to 17, wherein

20 said first regulator comprises a switching regulator, and said second and third regulators comprise linear regulators.

19. An electric power supply unit according to any one of claims 5 to 17, wherein

said first regulator comprises a going up and down pressure switching regulator, and said second and third regulators are linear regulators.